Complete Summary

GUIDELINE TITLE

Complicated urinary tract infections due to urological disorders. In: Guidelines on urological infections.

BIBLIOGRAPHIC SOURCE(S)

Complicated URIs due to urological disorders. In: Grabe M, Bishop MC, Bjerklund-Johansen TE, Botto H, Çek M, Lobel B, Naber KG, Palou J, Tenke P, Wagenlehner F. Guidelines on urological infections. Arnhem, The Netherlands: European Association of Urology (EAU); 2009 Mar. p. 60-5. [25 references]

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: Complicated UTIs due to urological disorders. In: Grabe M, Bishop MC, Bjerklund-Johansen TE, Botto H, Çek M, Lobel B, Naber KG, Palou J, Tenke P. Guidelines on the management of urinary and male genital tract infections. Arnhem, The Netherlands: European Association of Urology (EAU); 2008 Mar. p. 64-9. [25 references]

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Urinary tract infections (UTIs) complicated by urological disorders, including:

- Structural or functional abnormalities of the genitourinary tract
- Underlying disease that interferes with host defense mechanisms

GUIDELINE CATEGORY

Diagnosis
Evaluation
Management
Treatment

CLINICAL SPECIALTY

Infectious Diseases
Urology

INTENDED USERS

Advanced Practice Nurses
Physician Assistants
Physicians

GUIDELINE OBJECTIVE(S)

- To assist urologists and physicians from other medical specialties in their daily practice
- To provide recommendations on the diagnosis and treatment of complicated urinary tract infections due to urological abnormalities

TARGET POPULATION

Patients with urinary tract infections due to urological abnormalities

INTERVENTIONS AND PRACTICES CONSIDERED

Diagnosis/Evaluation

1. Assessment of clinical symptoms
2. Urine culture
3. Assessment of complicating factors (urinary stones, urinary catheter)
4. Frequency of urine culture

Treatment/Management

1. Antibiotic therapy (fluoroquinolones, aminopenicillin, beta-lactamase inhibitor [BLI], cephalosporin [group 2, 3a, or 3b], aminoglycoside, piperacillin, carbapenem, combination therapy)
2. Hospitalization and parenteral antibiotics in severe cases
3. Correction of urological abnormality, if possible
4. Duration of treatment

MAJOR OUTCOMES CONSIDERED

- Cure rate

- Urinary tract infection recurrence rate
- Development of antibiotic resistance rate

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Primary Sources)
Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

General Search Strategy

A structured literature search is performed for all guidelines but this search is limited to randomized controlled trials and meta-analyses, covering at least the past three years, or up until the date of the latest text update if this exceeds the three-year period. Other excellent sources to include are other high-level evidence, Cochrane review and available high-quality guidelines produced by other expert groups or organizations. If there are no high-level data available, the only option is to include lower-level data. The choice of literature is guided by the expertise and knowledge of the Guidelines Working Group.

Specific Strategy for This Guideline

For literature review, PubMed was searched for published meta-analyses, which were used as far as available. Otherwise there was a non-structured literature review process by the guidelines group members. Each member was responsible for one chapter (reporter).

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Levels of Evidence

Ia Evidence obtained from meta-analysis of randomized trials

Ib Evidence obtained from at least one randomized trial

IIa Evidence obtained from at least one well-designed controlled study without randomization

IIb Evidence obtained from at least one other type of well-designed quasi-experimental study

III Evidence obtained from well-designed non-experimental studies, such as comparative studies, correlation studies and case reports

IV Evidence obtained from expert committee reports or opinions or clinical experience of respected authorities

METHODS USED TO ANALYZE THE EVIDENCE

Review of Published Meta-Analyses
Systematic Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus (Consensus Development Conference)

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

General Methods Used to Formulate the Recommendations

- The first step in the European Association of Urology (EAU) guidelines procedure is to define the main topic.
- The second step is to establish a working group. The working groups comprise about 4-8 members, from several countries. Most of the working group members are academic urologists with a special interest in the topic. Specialists from other medical fields (radiotherapy, oncology, gynaecology, anaesthesiology etc.) are included as full members of the working groups as needed. In general, general practitioners or patient representatives are not part of the working groups. Each member is appointed for a four-year period, renewable once. A chairman leads each group.
- The third step is to collect and evaluate the underlying evidence from the published literature.
- The fourth step is to structure and present the information. All main recommendations are summarized in boxes and the strength of the recommendation is clearly marked in three grades (A-C), depending on the evidence source upon which the recommendation is based. Every possible effort is made to make the linkage between the level of evidence and grade of recommendation as transparent as possible.

Specific Methods Used for This Guideline

The members of the Urinary Tract Infection (UTI) Working Group of the European Association of Urologists (EAU) Health Care Office established the first version of these guidelines in several consensus conferences. The members of the current

UTI Working Group of the EAU Guidelines Office updated the guidelines in several consensus conferences thereafter. The first draft of each chapter was sent to the committee members asking for comments, which were then considered, discussed and incorporated accordingly.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Grades of Recommendation

A. Based on clinical studies of good quality and consistency addressing the specific recommendations and including at least one randomized trial
B. Based on well-conducted clinical studies, but without randomized clinical studies
C. Made despite the absence of directly applicable clinical studies of good quality

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

The formal agreement to each updated chapter was achieved by the European Association of Urology (EAU) working group in a series of meetings.

There is no formal external review prior to publication.

The Appraisal of Guidelines for Research and Evaluation (AGREE) instrument was used to analyse and assess a range of specific attributes contributing to the validity of a specific clinical guideline.

The AGREE instrument, to be used by two to four appraisers, was developed by the AGREE collaboration (www.agreecollaboration.org) using referenced sources for the evaluation of specific guidelines. (See the "Availability of Companion Documents" field for further methodology information).

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

The following is a summary of the recommendations for complicated urinary tract infections due to urological disorders. Refer to the original guideline for more detailed recommendations and discussion.

Levels of evidence (**Ia-IV**) and grades of recommendation (**A-C**) are defined at the end of the "Major Recommendations" field.

A complicated urinary tract infection (UTI) is an infection associated with a condition, such as a structural or functional abnormality of the genitourinary tract, or the presence of an underlying disease that interferes with host defense mechanisms, which increase the risks of acquiring infection or of failing therapy.

A broad range of bacteria can cause a complicated UTI. The spectrum is much larger than in uncomplicated UTIs and bacteria are more likely to be resistant to antimicrobials, especially in a treatment-related complicated UTI.

Enterobacteriaceae are the predominant pathogens, with *Escherichia coli* being the most common pathogen. However, non-fermenters (e.g., *Pseudomonas aeruginosa*) and Gram-positive cocci (e.g., staphylococci and enterococci) may also play an important role, depending on the underlying conditions.

Treatment strategy depends on the severity of the illness. Treatment encompasses three goals: management of the urological abnormality, antimicrobial therapy (see table below), and supportive care when needed. Hospitalization is often required. To avoid the emergence of resistant strains, therapy should be guided by urine culture whenever possible.

If empirical therapy is necessary, the antibacterial spectrum of the antibiotic agent should include the most relevant pathogens (**A**). A fluoroquinolone with mainly renal excretion, an aminopenicillin plus a beta-lactam inhibitor (BLI), a Group 2 or 3a cephalosporin or, in the case of parenteral therapy, an aminoglycoside, are recommended alternatives (**1bB**).

In case of failure of initial therapy, or in case of clinically severe infection, a broader-spectrum antibiotic should be chosen that is also active against *Pseudomonas* (**1bB**) (e.g., a fluoroquinolone [if not used for initial therapy], an acylaminopenicillin [piperacillin] plus a BLI, a Group 3b cephalosporin, or a carbapenem, with or without combination with an aminoglycoside) (**1bB**).

The duration of therapy is usually 7-14 days (**1bA**), but has sometimes to be prolonged for up to 21 days (**1bA**).

Until predisposing factors are completely removed, true cure without recurrent infection is usually not possible. Therefore, a urine culture should be carried out 5-9 days after the completion of therapy and also 4-6 weeks later (**B**).

Table: Antimicrobial Treatment Options for Empiric Therapy

Antibiotics Recommended for Initial Empirical Treatment
• Fluoroquinolones • Aminopenicillin plus a B-lactam inhibitor (BLI) • Cephalosporin (Groups 2 or 3a) • Aminoglycoside
Antibiotics Recommended for Empirical Treatment in Case of Initial Failure or for Severe Cases

- Fluoroquinolone (if not used for initial therapy)
- Ureidopenicillin (piperacillin) plus BLI
- Cephalosporin (Group 3b)
- Carbapenem
- Combination therapy:
    - Aminoglycoside + BLI
    - Aminoglycoside + fluoroquinolone

Antibiotics Not Recommended for Empirical Treatment

- Aminopenicillins (e.g., amoxicillin, ampicillin)
- Trimethoprim-sulphamethoxazole (only if susceptibility of pathogen is known)
- Fosfomycin trometamol

Definitions:

Levels of Evidence

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CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is identified and graded for most of the recommendations (see the "Major Recommendations" field).

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Appropriate diagnosis and management of complicated urinary tract infections (UTIs) due to urological disorders

POTENTIAL HARMS

- Side effects from treatment
- Development of antimicrobial resistance

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

The purpose of these texts is not to be proscriptive in the way a clinician should treat a patient but rather to provide access to the best contemporaneous consensus view on the most appropriate management currently available. European Association for Urology (EAU) guidelines are not meant to be law texts but are produced with the ultimate aim to help urologists with their day-to-day practice.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

The European Association of Urology (EAU) Guidelines long version (containing all 19 guidelines) is reprinted annually in one book. Each text is dated. This means that if the latest edition of the book is read, one will know that this is the most updated version available. The same text is also made available on a CD (with hyperlinks to PubMed for most references) and posted on the EAU websites Uroweb and Urosource (www.uroweb.org/professional-resources/guidelines/ & http://www.urosource.com/diseases/).

Condensed pocket versions, containing mainly flow-charts and summaries, are also printed annually. All these publications are distributed free of charge to all (more than 10,000) members of the Association. Abridged versions of the guidelines are published in European Urology as original papers. Furthermore, many important websites list links to the relevant EAU guidelines sections on the association websites and all, or individual, guidelines have been translated to some 15 languages.

IMPLEMENTATION TOOLS

Foreign Language Translations
Pocket Guide/Reference Cards
Resources

For information about availability, see the "Availability of Companion Documents" and "Patient Resources" fields below.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Complicated URIs due to urological disorders. In: Grabe M, Bishop MC, Bjerklund-Johansen TE, Botto H, Çek M, Lobel B, Naber KG, Palou J, Tenke P, Wagenlehner F. Guidelines on urological infections. Arnhem, The Netherlands: European Association of Urology (EAU); 2009 Mar. p. 60-5. [25 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2008 Mar (revised 2009 Mar)

GUIDELINE DEVELOPER(S)

European Association of Urology - Medical Specialty Society

SOURCE(S) OF FUNDING

European Association of Urology

GUIDELINE COMMITTEE

Urinary Tract Infection Guidelines Working Group

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Group Members: M. Grabe (*Chairman*); M.C. Bishop; T.E. Bjerklund-Johansen; H. Botto, M. Çek; B. Lobel; K.G. Naber; J. Palou; P. Tenke; F. Wagenlehner

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

All members of the Urological Infections guidelines writing panel have provided disclosure statements of all relationships which they have and which may be perceived as a potential source of conflict of interest. This information is kept on file in the European Association of Urology (EAU) Central Office database. This guidelines document was developed with the financial support of the European Association of Urology. No external sources of funding and support have been involved. The EAU is a non-profit organisation and funding is limited to administrative assistance and travel and meeting expenses. No honoraria or other reimbursements have been provided.

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GUIDELINE AVAILABILITY

Electronic copies: Available in Portable Document Format (PDF) from the European Association of Urology Web site.

Print copies: Available from the European Association of Urology, PO Box 30016, NL-6803, AA ARNHEM, The Netherlands.

AVAILABILITY OF COMPANION DOCUMENTS

The following are available:

- Guidelines on urological infections. Pocket guideline. Arnhem, The Netherlands: European Association of Urology (EAU); 2009 Mar. 17 p. Electronic copies: Available in English and Russian from the EAU Web site. Also available as an e-book form the EAU Web site.
- EAU guidelines office template. Arnhem. The Netherlands: European Association of Urology (EAU); 2007. 4 p.
- The European Association of Urology (EAU) guidelines methodology: a critical evaluation. Arnhem, The Netherlands: European Association of Urology (EAU); 18 p.

Print copies: Available from the European Association of Urology, PO Box 30016, NL-6803, AA ARNHEM, The Netherlands.

PATIENT RESOURCES

None available

NGC STATUS

This NGC summary was completed by ECRI Institute on September 8, 2008. The information was verified by the guideline developer on December 8, 2008. This summary was updated by ECRI Institute on January 8, 2010.

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